

What is claimed is:

1. An improved method of laminating sheets of acrylic and/or polyester resins which includes the step of pressing a resinated sheet against a sheet of paper having an easy-release surface, wherein the improvement comprising pressing the resinated sheet against a sheet of

5 paper having at least one outer surface coated with an aqueous polymeric release coating composition produced by reacting in an emulsion polymerization reaction a mixture comprising:

a) from about 10.0% to about 60.0% by total weight of the mixture of a member selected from the group consisting of water-dispersible stabilizing polymers and combinations thereof;

10 b) from about 40.0% to about 90.0% by total weight of the mixture of a member selected from the group consisting of vinylic monomers and combinations thereof;

c) up to about 20.0% by total weight of the mixture of a member selected from the group consisting of fatty acids having an acid number of at least 100 and combinations thereof;

15 d) up to about 3.0% by total weight of the mixture of a chain transfer agent;

e) up to about 20.0% by total weight of the mixture of a member selected from the group consisting of non-ionic surfactants, ionic surfactants, and combinations thereof;

f) a catalytic amount of at least one polymerization initiator; and

g) the balance of the mixture being water.

2. The method of claim 1 which further comprises pressing the resinated sheet against a sheet of paper having at least one outer surface coated with an aqueous polymeric release coating composition produced by reacting in an emulsion polymerization reaction a mixture comprising:

- a) from about 15.0% to about 25.0% by total weight of the mixture of a member selected  
5 from the group consisting of water-dispersible stabilizing polymers and combinations thereof;
- b) from about 75.0% to about 85.0% by total weight of the mixture of a member selected from the group consisting of vinylic monomers and combinations thereof;
- c) up to about 10.0% by total weight of the mixture of a member selected from the group  
10 consisting of fatty acids having an acid number of at least 100 and combinations thereof;
- d) up to about 2.0% by total weight of the mixture of a chain transfer agent;
- e) up to about 5.0% by total weight of the mixture of a member selected from the group consisting of non-ionic surfactants, ionic surfactants, and combinations thereof;
- f) a catalytic amount of at least one polymerization initiator; and  
15 g) the balance of the mixture being water.

3. The method of claim 1 wherein the water-dispersible stabilizing polymer is a member selected from the group consisting of the non-emulsion polymerization reaction product of :

- a) a member selected from the group consisting of acrylic acid, methacrylic acid, fumaric acid, maleic anhydride, and combinations thereof; and  
20 b) a member selected from the group consisting of vinylic monomer and combinations thereof.

4. The method of claim 3 wherein the vinylic monomer employed in the non-emulsion polymerization reaction is a member selected from the group consisting of styrenic monomers, acrylic monomers, methacrylic monomers, ethylenic monomers, and combinations thereof.

5

5. The method of claim 4 wherein the vinylic monomer employed in the non-emulsion polymerization reaction is a member selected from the group consisting of acrylic acid, methacrylic acid, methyl methacrylate, ethyl methacrylate, n-propyl methacrylate, n-butyl methacrylate, isopropyl methacrylate, isobutyl methacrylate, n-amyl methacrylate, n-hexyl methacrylate, isoamyl methacrylate, 2-hydroxyethyl methacrylate, 2-hydroxypropyl methacrylate, N,N-dimethylaminoethyl methacrylate, N,N-diethylaminoethyl methacrylate, t-butylaminoethyl methacrylate, 2-sulfoethyl methacrylate, trifluoroethyl methacrylate, glycidyl methacrylate, benzyl methacrylate, allyl methacrylate, 2-n-butoxyethyl methacrylate, 2-chloroethyl methacrylate, sec-butyl-methacrylate, tert-butyl methacrylate, 2-ethylbutyl methacrylate, cinnamyl methacrylate, crotyl methacrylate, cyclohexyl methacrylate, cyclopentyl methacrylate, 2-ethoxyethyl methacrylate, furfuryl methacrylate, hexafluoroisopropyl methacrylate, methallyl methacrylate, 3-methoxybutyl methacrylate, 2-methoxybutyl methacrylate, 2-nitro-2 methylpropyl methacrylate, n-octylmethacrylate, 2-ethylhexyl methacrylate, 2-phenoxyethyl methacrylate, 2-phenylethyl methacrylate, phenyl methacrylate, propargyl methacrylate, tetrahydrofurfuryl methacrylate, tetrahydropyranyl methacrylate, methyl acrylate, ethyl acrylate, n-propyl acrylate, isopropyl acrylate, n-butyl acrylate, n-decyl acrylate, 2-ethylhexal acrylate, salts of methacrylic acid, methacrylonitrile, methacrylamide, N-methylmethacrylamide, N-ethylmethacrylamide, N,N-diethylmethacrylamide, N,N-dimethylmethacrylamide, N-phenyl-methacrylamide, methacrolein, salts of acrylic acid, acrylonitrile, acrylamide,

25

diethylacrylamide acrolein, vinyl acetate, vinyl chloride, vinyl pyridine, vinyl pyrrolidone, sodium crotonate, methyl crotonate, crotonic acid, maleic anhydride, and combinations thereof.

- 5     6.     The method of claim 1 wherein the vinylic monomer employed in the emulsion  
polymerization reaction is a member selected from the group consisting of styrenic  
monomers, acrylic monomers, methacrylic monomers, ethylenic monomers, and  
combinations thereof.
- 10     7.     The method of claim 7 wherein the vinylic monomer employed in the emulsion  
polymerization reaction is a member selected from the group consisting of acrylic acid,  
methacrylic acid, methyl methacrylate, ethyl methacrylate, n-propyl methacrylate, n-butyl  
methacrylate, isopropyl methacrylate, isobutyl methacrylate, n-amyl methacrylate, n-  
hexyl methacrylate, isoamyl methacrylate, 2-hydroxyethyl methacrylate, 2-hydroxypropyl  
15     methacrylate, N,N-dimethylaminoethyl methacrylate, N,N-diethylaminoethyl  
methacrylate, t-butylaminoethyl methacrylate, 2-sulfoethyl methacrylate, trifluoroethyl  
methacrylate, glycidyl methacrylate, benzyl methacrylate, allyl methacrylate, 2-n-  
butoxyethyl methacrylate, 2-chloroethyl methacrylate, sec-butyl-methacrylate, tert-butyl  
methacrylate, 2-ethylbutyl methacrylate, cinnamyl methacrylate, crotyl methacrylate,  
20     cyclohexyl methacrylate, cyclopentyl methacrylate, 2-ethoxyethyl methacrylate, furfuryl  
methacrylate, hexafluoroisopropyl methacrylate, methallyl methacrylate, 3-methoxybutyl  
methacrylate, 2-methoxybutyl methacrylate, 2-nitro-2 methylpropyl methacrylate, n-  
octylmethacrylate, 2-ethylhexyl methacrylate, 2-phenoxyethyl methacrylate, 2-  
phenylethyl methacrylate, phenyl methacrylate, propargyl methacrylate, tetrahydrofurfuryl  
25     methacrylate, tetrahydropyranyl methacrylate, methyl acrylate, ethyl acrylate, n-propyl

of methacrylic acid, methacrylonitrile, methacrylamide, N-methylmethacrylamide, N-ethylmethacrylamide, N,N-diethylmethacrylamide, N,N-dimethylmethacrylamide, N-phenyl-methacrylamide, methacrolein, salts of acrylic acid, acrylonitrile, acrylamide, methyl alpha-chloroacrylate, methyl 2-cyanoacrylate, N-ethylacrylamide, N,N-diethylacrylamide acrolein, vinyl acetate, vinyl chloride, vinyl pyridine, vinyl pyrrolidone, sodium crotonate, methyl crotonate, crotonic acid, maleic anhydride, and combinations thereof.

8. The method of claim 1 wherein the fatty acid is a member selected from the group consisting of fatty acids containing from 12 to 24 carbon atoms and combinations thereof.

9. The method of claim 1 wherein the chain transfer agent is a member selected from the group consisting of dodecyl mercaptan, mercaptoacetic acid, mercaptopropionic acid, octyl mercaptan, 2-mercaptoethanol, alkyl mercaptopropionates, and combinations thereof.

10. The method of claim 1 wherein the nonionic surfactant is a member selected from the group consisting of ethoxylated alkylphenols, ethoxylated fatty alcohols, ethylene oxide/propylene oxide block copolymers, and combinations thereof.

11. The method of claim 1 wherein the anionic surfactant is a member selected from the group consisting of alkyl sulfates, ether sulfates, phosphate esters, sulfonates, and combinations thereof.

12. The method of claim 1 wherein the polymerization initiator comprises from about 0.5% to about 5.0% by total weight of the mixture and is a member selected from the group consisting of thermal initiators, redox initiators, and combinations thereof.
- 5 13. The method of claim 12 wherein the thermal initiator is a member selected from the group consisting of hydrogen peroxide, t-butyl hydroperoxide, di-t-butyl peroxide, benzoyl peroxide, benzoyl hydroperoxide, 2,4-dichlorobenzoyl peroxide, t-butyl peracetate, azobisisobutyronitrile, isopropyl peroxy carbonate, and combinations thereof.
- 10 14. The method of claim 12 wherein the redox initiator is a member selected from the group consisting of cumene hydroperoxide-sodium metabisulfite, cumene hydroperoxide-iron (II) sulfate, and combinations thereof.
- 15 15. The method of claim 1 which further comprises the addition to the release coating composition of from about 0.1% to about 30.0% by total weight of the release coating composition of a member selected from the group consisting of salts of alginic acid, talc, clay, wax, calcium stearate, zinc stearate, and combinations thereof.
- 20 16. The method of claim 15 which further comprises the addition to the release coating composition of from about 0.5% to about 15.0% by total weight of the release coating composition of a member selected from the group consisting of salts of alginic acid, talc, clay, wax, calcium stearate, zinc stearate, and combinations thereof.
- 25 17. The method of claim 1 wherein the release coating composition is applied to the paper sheet at a coat-weight in the range of about 0.7 to about 3.0 dry pounds of coating

18. The method of claim 17 wherein the release coating composition is applied to the paper sheet at a coat-weight in the range of about 1.0 to 2.0 dry pounds of coating composition per square foot of paper.

5

19. The method of claim 1 wherein the pH of the release coating composition is in the range of about 7.0 to about 11.

20. The method of claim 19 wherein the pH of the release coating composition is in the range of about 8.0 to about 9.5.

10

15